

Population Forecasts: Long-Term Projections for Clark County, Nevada 2010-2050

2010

Prepared by

Constant Tra, Ph.D., Associate Director, CBER
Elvis Fong, Graduate Assistant, CBER

Prepared for

Regional Transportation Commission, Southern Nevada Water Authority, Southern Nevada Regional Planning Coalition, and members of the Forecasting Group

June 7, 2010



Population Projections: 2010

Prepared by

Center for
Business and
Economic
Research

**The
Center
for
Business
and
Economic
Research**

University of Nevada, Las Vegas
4505 S. Maryland Parkway
Las Vegas, Nevada 89154-6002
(702) 895-3191
CBER@unlv.nevada.edu
<http://cber.unlv.edu>
Copyright ©2010, CBER

TABLE OF CONTENTS

Executive Summary	1
I. Introduction.....	4
II. Comparison of REMI Models: Current and Previous Years	6
III. Recalibrating the Model	9
A. Adjustment of the national GDP forecast.....	9
B. Adjustment for migration	10
C. Employment adjustment	10
D. Adjustments for new hotel construction	13
E. Transportation and infrastructure improvements	15
F. Amenity adjustments	16
G. Rebasing the population forecast	17
IV. Analysis of the Economic and Demographic Forecast	18
A. Population.....	19
B. Employment.....	19
C. Gross regional product.....	20
V. Comparing Current Forecast with Previous Years of the Forecast.....	23
VI. Risks to the Forecast.....	24
VII. Conclusion	27
Appendices.....	29
Appendix A: Computation of the Jobs-to-Room Ratio	30
Appendix B: Detailed Result Tables	32

LIST OF TABLES

Table 1: Clark County Final Population Forecast: 2000 – 2050	3
Table 2: Employment Growth Rates for Clark County Before Adjustment	11
Table 3: Model Job Adjustments (in 000s) for 2008 and 2009	12
Table 4: Hotel Construction Adjustment	14
Table 5: Population History, REMI Forecast, and Rebased Forecast.....	18
Table 6: Employment History and Forecasts.....	21
Table 7: Gross Regional Product History and Forecasts	22
Table 8: Out-of-the-Box Clark County Population and Population-Growth Forecasts from REMI Models LHY2006 and LHY2007.....	32
Table 9: Detailed Final Population Forecast: 2000 – 2050.....	33
Table 10: Las Vegas Room Inventory Summary	34
Table 11: Economic Forecast After Employment, Hotel, Amenity, and Transit Adjustments	35
Table 12: Employment	37
Table 13: Employment II	40
Table 14: Gross Regional Product.....	42
Table 15: Income.....	44
Table 16: Population and Labor Force.....	47
Table 17: Demographics.....	49

LIST OF FIGURES

Figure 1: Clark County Population Forecasts: REMI Out-of-the-Box LHY2007 and LHY2006: 2010-2035	8
Figure 2: Clark County Population Growth Rate Forecasts: REMI Out-of-the-Box LHY2007 and LHY2006: 2010-2035	8
Figure 3: Clark County Historic Population-Growth-Rate Forecasts: 2010-2035...	24

Executive Summary

Each year, the Regional Transportation Commission (RTC), the Southern Nevada Water Authority (SNWA), the Southern Nevada Regional Planning Coalition (SNRPC), the Center for Business and Economic Research (CBER) at the University of Nevada, Las Vegas, and a group of community demographers and analysts work together to provide a long-term forecast of economic and demographic variables influencing Clark County. The primary goal is to develop a long-term forecast of the Clark County population that is consistent with the structural economic characteristics of the county. Toward this end, we employ a general-equilibrium demographic and economic model developed by Regional Economic Models, Inc. (REMI), specifically for Clark County.

The model recalibration incorporates the most recent available information about national GDP, migration, employment growth, expected hotel construction, transit investment, and an amenity factor representing negative externalities from growth. The resulting forecast predicts positive population growth throughout the range of the forecast. By 2035, we predict that Clark County's population will reach 3.13 million. By 2050, we predict that it will reach 3.93 million.

Table 1 summarizes the population forecast. The population in Clark County is predicted to grow at a rate of 1.6 percent in 2010. We note that, despite short-term economic uncertainties and model difficulties, the long-term population-growth estimate, which is the main focus of this forecasting exercise, is fairly consistent with past forecasts. By 2020, population growth has risen to 1.8 percent. By 2025, growth begins to taper off as the Clark County economy is expected to mature; and it reaches 1.3 percent, just above the estimated long-term national population growth rate of 1 percent, by 2050.

This represents a long-term convergence to the national average annual population-growth rate, which is projected to stabilize at around 1 percent after 2020.

The current recession affects population. A severe recession drives up unemployment rates and places people at economic risk. During such periods, one might expect slower rates of migration as people tend to be less sure of their economic environment in locations with which they are not as familiar. For economies such as Clark County, where there is a fairly higher percentage of the work force in construction than the national economy, the stoppage of construction of big projects is likely to result in out-migration because workers in this industry are accustomed to moving to find work. The effect of the current economic environment is to keep the population levels below the trend line shown in the baseline forecast. Again, these recent events are natural swings of a couple years' duration and should be fully expected over the forecast range.

Although we feel this year's forecasts are sound, there are significant risks to the forecasts which could lead to either over- or underestimated population growth in the short run. Specifically, the assumptions used in the forecast rely on current knowledge of construction activity on the Las Vegas Strip. To the extent that new information differs, the short-run forecasts will differ. We say, however, that these risks tend to arise from short-run uncertainty; whereas, our forecasts are primarily meant to be long-run planning tools.

Table 1: Clark County Final Population Forecast: 2000 – 2050 ¹

Year	Population	Annual Change	Annual Percent Change
2000	1,428,690*	107,373	8.1%
2001	1,498,274*	69,584	4.9%
2002	1,578,332*	80,058	5.3%
2003	1,641,529*	63,197	4.0%
2004	1,747,025*	105,496	6.4%
2005	1,815,700*	68,675	3.9%
2006	1,912,654*	96,954	5.3%
2007	1,996,542*	83,888	4.2%
2008	1,986,146*	-10,396	-0.5%
2009	2,006,347*	20,201	1.0%
2010	2,039,000	32,653	1.6%
2011	2,071,000	32,000	1.6%
2012	2,105,000	34,000	1.6%
2013	2,139,000	34,000	1.6%
2014	2,176,000	37,000	1.7%
2015	2,214,000	38,000	1.7%
2016	2,253,000	39,000	1.8%
2017	2,293,000	40,000	1.8%
2018	2,334,000	41,000	1.8%
2019	2,375,000	41,000	1.8%
2020	2,418,000	43,000	1.8%
2021	2,461,000	43,000	1.8%
2022	2,504,000	43,000	1.8%
2023	2,549,000	45,000	1.8%
2024	2,594,000	45,000	1.8%
2025	2,639,000	45,000	1.8%
2026	2,685,000	46,000	1.7%
2027	2,732,000	47,000	1.7%
2028	2,779,000	47,000	1.7%
2029	2,827,000	48,000	1.7%
2030	2,876,000	49,000	1.7%
2031	2,925,000	49,000	1.7%
2032	2,975,000	50,000	1.7%
2033	3,026,000	51,000	1.7%
2034	3,077,000	51,000	1.7%
2035	3,129,000	52,000	1.7%
2040	3,394,000	54,000	1.6%
2045	3,665,000	54,000	1.5%
2050	3,926,000	51,000	1.3%

*2000-2009 are historical estimates from Clark County Comprehensive Planning.
Note: The average annual forecasted growth rate is 1.6%.

¹ A full table with all the years appears in Appendix B.

I. Introduction²

Each year, the Regional Transportation Commission (RTC), the Southern Nevada Water Authority (SNWA), the Southern Nevada Regional Planning Coalition (SNRPC), the Center for Business and Economic Research (CBER) at the University of Nevada, Las Vegas, and a group of community demographers and analysts work together to provide a long-term forecast of economic and demographic variables influencing Clark County. The primary goal is to develop a long-term forecast of the Clark County population that is consistent with the structural economic characteristics of the county. Toward this end, we employ a general-equilibrium demographic and economic model developed by Regional Economic Models, Inc. (REMI), specifically for Clark County.

The REMI model is a state-of-the-art econometric forecasting model that accounts for dynamic feedbacks between economic and demographic variables. Special features allow the user to update the model to include the most current economic information. CBER calibrates the model using information on recent employment levels, migration statistics, the most recent national Gross Domestic Product (GDP) forecast, spending on local capital projects, local information on hotel construction, and adjustments for disamenities related to population growth to reflect local information in the forecast.

The model employed divides Nevada into six regions: Clark County; Nye County; Lincoln County; Washoe County; Carson City; and the remaining counties, which are combined to form a sixth region. These regions are modeled using the U.S. economy as a backdrop. The model contains over 100 economic and demographic relationships that are carefully constructed to concisely represent the Clark County economy. The model

² Thanks to Rennae Daneshvary and members of the forecasting group for comments on earlier versions of this report.

includes equations to account for migration and trade between Nevada counties and other states and counties in the country.

The demographic and economic data used to construct the model begin in 1990, the most important of which include the aggregate totals of employment, labor force, and population. The economic data for the most recent version of the model (REMI PI+ v1.1) are consistent with the North American Industry Classification System (NAICS). The most recent data for REMI PI+ v1.1 are from 2007 because the Bureau of Labor Statistics (BLS) personal-income data are reported with a two-year lag. Over the years, the availability of the income data has been the key in setting the last year of history in the model.

The REMI model is the best model available for describing how economies interact geographically.³ These interactions may take place within a single economy (such as the interaction between house-price growth and employment growth in Clark County) or between two economies (such as the interaction between Southern Nevada and Southern California). These and over 100 other interactions contained within the model are too complex to consider modeling on our own. Rather, we turn to the REMI model because it has a solid foundation in economic theory and the principles of general-equilibrium-based growth distribution, yet it still offers the flexibility required to model a regional economy like Clark County.

To guarantee that the most current data are used in the forecast, we make a series of adjustments to the model. In this way, we ensure that the forecast model includes the best available information at the time the forecast is made. First, the model's national GDP forecast is updated using the latest available national forecast from the University of

³ See Schwer, R. K. and D. Rickman (1995), "A comparison of the multipliers of IMPLAN, REMI and RIMS II: Benchmarking ready-made models for comparison," *The Annals of Regional Science*, 1995.

Michigan. The second adjustment updates the model with the most recent Clark County migration statistics from the Internal Revenue Service (IRS). The third adjustment updates the model with the employment figures from the Nevada Department of Employment, Training, and Rehabilitation (DETR). Next, the future hotel employment is adjusted based on the expectation of hotel rooms that will be added in the near future. The fifth adjustment to the model is to include planned new investment in public infrastructure using information from RTC. The sixth adjustment accounts for the potential secondary effects of population growth on the quality of life in Clark County. Lastly, we rebase the population forecast to the most recent local population estimate for use in local planning.

In the following section, we first examine the changes in the REMI model from last year's model. Following that, in Section III, we present sequentially the changes we make to update the model and tailor it to local information. In Section IV, we present the population forecast and give a brief discussion of the economic environment surrounding the forecast. In Section V, we compare the population-growth forecast with previous years' forecasts. We conclude with a discussion of the risks to the forecast.

II. Comparison of REMI Models: Current and Previous Year

Over the years, we have compared the most recent out-of-the-box REMI models, that is, the current forecast that one finds before any model calibrations are made, with corresponding out-of-the-box forecasts from the previous models. This gives us the opportunity to examine how the new model differs from the previous versions and to explore the causes of these differences.

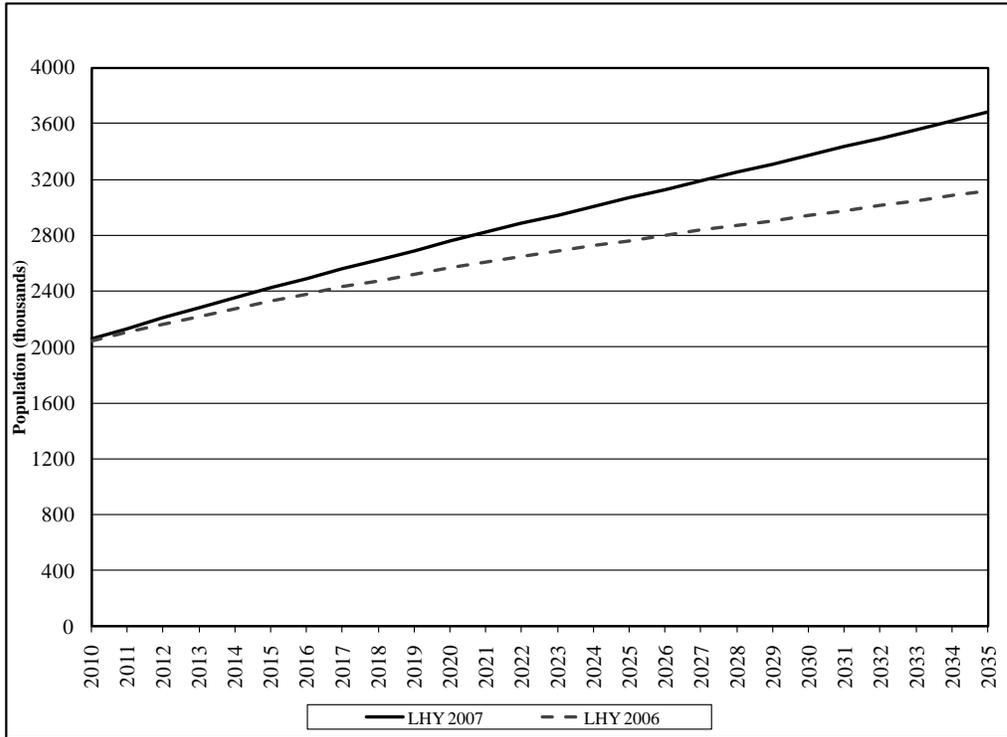
The most recent data used to develop this year's model are from 2007. Thus, we refer to the current model as last historical year 2007 (LHY2007) and the previous model as last historical year 2006 (LHY2006).

Each year the REMI staff and users discuss the workings of the modeling scheme and propose changes for improvement. Based on research findings, each year's model incorporates improvements in addition to the inclusion of more recent data. The new model, identified as PI+ version 1.1, offers two improvements. The industry estimates for 1990-2006 are based on the 2002 North American Industry Classification System (NAICS); whereas, the estimates for 2007-2050 are based on the 2007 NAICS. In addition, the estimates of compensation rate elasticities have been updated from the previous set of estimates, last done in 2001. These updates lead to the differences in the out-of-the-box population forecast between the LHY2007 model and the LHY2006 model.

Figures 1 and 2 compare the population forecast from the out-of-the-box LHY2006 and LHY2007 models, i.e., without any updating for migration, employment, new hotel information, infrastructure projects, the amenity factor, or the national GDP forecast.⁴ Compared to the LHY2006 model, the out-of-the-box population forecast arising from the LHY2007 model is slightly higher during the first years of the forecast. The difference between the two forecasts is larger in the later years of the forecast. The growth rates in the LHY2007 model are noticeably higher on average than those from the LHY2006 model over the years of the forecast. By 2050, the out-of-the-box forecasted population in the LHY2007 model is 793,000 people higher than the LHY2006 model.

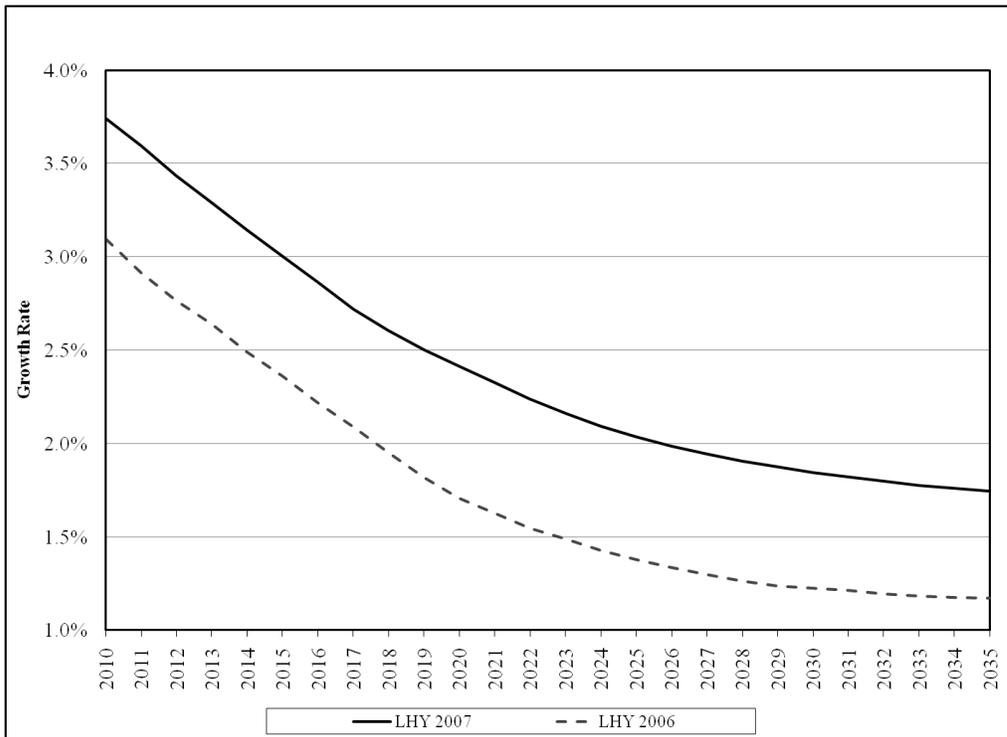
⁴ A table detailing the out-of-the-box results appears in Appendix B.

Figure 1: Clark County Population Forecasts: REMI Out-of-the-Box LHY2007 and LHY2006: 2010-2035



Note: Out-of-the-box refers to the model prior to recalibration. These numbers are not the final forecast.

Figure 2: Clark County Population Growth Rate Forecasts: REMI Out-of-the-Box LHY2007 and LHY2006: 2010-2035



Note: Out-of-the-box refers to the model prior to recalibration. These numbers are not the final forecast.

The significant difference in the out-of-the-box forecasted population from the LHY2007 and LHY2006 models is due to larger predicted economic migrants in the LHY2007 model. The larger economic migrants are due to an increased real relative wage rate in 2007, which was caused by housing prices falling significantly in Clark County, in 2007, relative to the nation. We address this issue by introducing a new adjustment for migration, which is discussed in the next section.

III. Recalibrating the Model

County-level personal income is only available with a two-year lag. As a result, the REMI model also has a two- to three-year lag with the most recent historical data from 2007 for the current model, PI+ version 1.1, released in 2009. To bring the model up to date, we update pertinent model information, including the most recent national GDP forecast, recent migration estimates, more recent employment figures, local information on hotel construction, spending on capital projects, and adjustments for disamenities related to population growth to reflect local information in the forecast. We describe each update in turn.

A. Adjustment of the national GDP forecast

The REMI model relies on a baseline national GDP forecast from the University of Michigan's Research Seminar in Quantitative Economics (RSQE). The current REMI model, PI+ version 1.1, uses the June 2009 GDP forecast from RSQE. We adjust the model's national GDP forecast using the March 2010 national GDP forecast from RSQE. Overall, we adjust the national GDP components upward by about \$77 billion in 2010 and \$276 billion in 2011.

B. Adjustment for migration

The REMI model forecasts the number of economic migrants in Clark County for 2008 through 2050 based on the relative wage rate and employment opportunity in Clark County with respect to the rest of the nation. However, this mechanism could lead to unrealistic migration patterns during a year of economic transition. In 2007, housing prices in Clark County declined faster relative to the rest of the nation. Hence, adjusted for housing prices, the relative wage rate in Clark County was higher than in the rest of the nation. This would lead the REMI model to allocate a large number of economic migrants to Clark County in the 2008 and 2009 baseline forecasts. To correct this issue, we adjust the number of domestic and international economic migrants, in 2008 and 2009, using the Clark County migration statistics from the IRS.

C. Employment adjustment

One of the most noteworthy updates we make to the REMI model is the employment adjustment. The industry-level employment data used by REMI are the sum of the BLS wage and salary estimates for Clark County and REMI's BLS-based estimate of the number of proprietors. The most recent historical year in the model data is 2007. However, more recent wage and salary employment data are available from the Nevada DETR for 2008 and 2009. Thus, we update the model to account for the more recent information.

The latest growth rates for the out-of-the-box REMI-model forecasts and recent DETR estimates are shown in Table 2 for 2008 and 2009. The actual growth rates from DETR differ substantially from the REMI out-of-the-box forecasts, suggesting a clear need for adjustments. The employment update is as follows: We calculate the annual percentage change using DETR data and apply the percentage changes to generate new

estimates for 2008 and 2009. The underlying assumption of this procedure is that the proportion of self-employed in each industry classification grows at the same rate as does the ratio between full- and part-time workers.

Industrial Classification	REMI Baseline Forecast		DETR Estimates	
	2008	2009	2008	2009
Construction	-10.20%	-16.06%	-10.05%	-30.28%
Wholesale trade	-2.86%	-8.20%	-0.97%	-10.09%
Retail trade	-2.22%	-5.21%	-0.47%	-8.18%
Transit, ground pass transportation	1.79%	-0.51%	-0.13%	-4.17%
Monetary authorities, et al.	-1.15%	-3.33%	-8.51%	-9.59%
Ins carriers, related activities	1.39%	-0.26%	-5.50%	-7.66%
Real estate	1.23%	0.65%	-4.30%	-13.72%
Prof, technical services	-0.10%	-5.18%	-3.48%	-9.39%
Management of companies	1.50%	-6.71%	7.37%	-3.04%
Administrative, support services	0.42%	-2.78%	-6.81%	-13.18%
Ambulatory health care services	-0.75%	0.58%	3.34%	1.94%
Hospitals	4.80%	3.46%	6.74%	0.72%
Amusement, gambling, and rec	4.15%	3.25%	-3.75%	-11.75%
Accommodation	1.63%	-0.61%	-3.11%	-6.79%
Food services, drinking places	3.86%	-2.62%	3.48%	-6.27%
Total	-0.27%	-3.21%	-1.69%	-9.43%

Table 3 reports the updated employment by category for the model. The Clark County job growth numbers in 2008 and 2009 are consistent with the beginning of the economic slowdown currently experienced by the Las Vegas area. The strong negative growth in the construction sector is indicative of the slowdown in the local housing market, while the negative growth in the accommodation sector correlates with the national economic recession which began in 2008. In addition, some components of our tourism industry (that is, retail trade; accommodation; amusement, gambling, and recreation; transit, ground passenger transportation; and scenic, sightseeing transportation) also experienced negative job-growth in 2008 and 2009. Other tourism-related industries (such as food services and drinking places) experienced mixed growth in that period. Overall, Southern

Nevada's economy experienced a loss of about 20,000 jobs in 2008, while in 2009 the local economy lost roughly 110,000 jobs.

Industrial Classification	Baseline	DETR Growth Rates		Adjusted Job Levels	
	History 2007	2008	2009	2008	2009
Forestry et al.	0.00	2.40%	-1.07%	0.00	0.00
Agriculture	0.30	2.03%	0.09%	0.30	0.30
Oil, gas extraction	0.00	9.00%	14.04%	0.00	0.00
Mining (except oil, gas)	1.46	-3.13%	-9.47%	1.42	1.28
Support activities for mining	0.03	22.27%	-21.53%	0.04	0.03
Utilities	3.17	0.22%	-2.55%	3.17	3.09
Construction	117.36	-10.05%	-30.28%	105.56	73.60
Wood product mfg	0.99	-8.38%	-9.00%	0.90	0.82
Nonmetallic mineral prod mfg	4.50	-1.71%	-6.54%	4.42	4.13
Primary metal mfg	0.57	-3.81%	-10.08%	0.54	0.49
Fabricated metal prod mfg	2.24	-6.03%	-10.67%	2.11	1.88
Machinery mfg	0.56	-8.72%	-19.03%	0.51	0.41
Computer, electronic prod mfg	0.55	-26.91%	-27.75%	0.40	0.29
Electrical equip, appliance mfg	0.58	-1.91%	-9.75%	0.57	0.52
Motor vehicle mfg	0.45	-18.59%	-16.88%	0.37	0.31
Transp equip mfg exc motor veh	0.27	-3.32%	-11.07%	0.26	0.23
Furniture, related prod mfg	2.16	-8.59%	-11.54%	1.97	1.74
Miscellaneous mfg	5.97	5.31%	-1.71%	6.29	6.18
Food mfg	3.18	2.40%	-3.88%	3.25	3.13
Beverage, tobacco prod mfg	0.16	2.85%	-2.34%	0.17	0.16
Textile mills	0.23	12.37%	2.39%	0.26	0.26
Textile prod mills	0.33	-1.45%	-1.05%	0.32	0.32
Apparel mfg	0.17	26.82%	25.98%	0.22	0.27
Leather, allied prod mfg	0.09	69.02%	56.40%	0.16	0.25
Paper mfg	0.42	1.44%	-4.99%	0.42	0.40
Printing, rel supp act	2.44	-2.02%	-6.27%	2.39	2.24
Petroleum, coal prod mfg	0.06	-2.25%	-4.91%	0.05	0.05
Chemical mfg	0.91	4.75%	-2.55%	0.95	0.93
Plastics, rubber prod mfg	2.26	-2.69%	-7.00%	2.20	2.05
Wholesale trade	29.06	-0.97%	-10.09%	28.78	25.87
Retail trade	120.39	-0.47%	-8.18%	119.82	110.02
Air transportation	5.43	2.94%	-2.84%	5.59	5.43
Rail transportation	0.35	-4.06%	-11.44%	0.33	0.29
Water transportation	0.03	9.96%	-9.50%	0.04	0.03
Truck transp; Couriers, msngrs	9.87	0.76%	-5.79%	9.95	9.37
Transit, ground pass transp	14.40	-0.13%	-4.17%	14.38	13.78
Pipeline transportation	0.04	-5.04%	-7.76%	0.04	0.03
Scenic, sightseeing transp; supp	5.58	5.00%	-5.63%	5.86	5.53
Warehousing, storage	4.09	2.17%	-3.14%	4.18	4.05

Table 3 Continued:	Baseline	DETR Growth Rates		Adjusted Job Levels	
Industrial Classification	History 2007	2008	2009	2008	2009
Internet serv, data proc, other	1.69	-1.59%	-4.18%	1.66	1.59
Broadcasting, exc Int; Telecomm	7.10	-0.71%	-3.75%	7.05	6.78
Monetary authorities, et al.	27.89	-8.51%	-9.59%	25.51	23.06
Sec, comm contracts, inv	15.44	1.62%	-4.39%	15.69	15.00
Ins carriers, rel act	12.68	-5.50%	-7.66%	11.98	11.06
Real estate	77.42	-4.30%	-13.72%	74.09	63.92
Rental, leasing services	7.31	-2.46%	-9.23%	7.13	6.47
Prof, tech services	60.97	-3.48%	-9.39%	58.85	53.32
Mgmt of companies, enterprises	14.81	7.37%	-3.04%	15.90	15.41
Administrative, support services	78.66	-6.81%	-13.18%	73.31	63.65
Waste mgmt, remed services	2.25	4.34%	1.11%	2.35	2.38
Educational services	7.94	5.24%	3.44%	8.36	8.64
Ambulatory health care services	32.42	3.34%	1.94%	33.50	34.15
Hospitals	15.10	6.74%	0.72%	16.12	16.23
Nursing, residential care facilities	6.29	6.32%	4.57%	6.69	6.99
Social assistance	15.69	6.64%	5.79%	16.73	17.70
Performing arts, spectator sports	19.29	1.58%	-1.07%	19.59	19.38
Museums et al.	0.29	5.79%	4.55%	0.30	0.32
Amusement, gambling, recreation	15.35	-3.75%	-11.75%	14.78	13.04
Accommodation	183.08	-3.11%	-6.79%	177.39	165.35
Food services, drinking places	77.73	3.48%	-6.27%	80.44	75.39
Repair, maintenance	12.07	0.81%	0.00%	12.16	12.16
Personal, laundry services	15.91	-1.65%	-1.41%	15.65	15.43
Membership assoc, organ	7.47	4.80%	3.05%	7.82	8.06
Private households	10.08	-1.49%	-1.23%	9.92	9.80
State & local Gov	85.91	0.59%	0.05%	86.42	86.46
Federal civilian	11.24	1.81%	5.58%	11.44	12.08
Federal military	12.18	4.39%	-0.74%	12.71	12.62
Farm	0.32	-0.83%	-1.18%	0.32	0.31
Publishing, exc Internet	2.90	-4.69%	-14.86%	2.77	2.35
Motion picture, sound rec	3.25	-2.49%	-7.60%	3.17	2.93
Total	1181.33	-1.69%	-9.43%	1161.37	1051.90

D. Adjustments for new hotel construction

Each year, we make an adjustment to future hotel employment based on our expectation of hotel rooms that will be added in the near future. The additional rooms and related employment represent properties that are either under construction with fixed opening dates, or properties that have development plans and a high probability that the projects

will be completed during the specified year. In this way, we ensure that the model includes a good short-term forecast of new hotel investment and employment.

As of March 2010, the Las Vegas Convention and Visitors Authority (LVCVA) projects that 3,000 hotel/motel rooms will be added to the local room stock by the end of 2010. This includes the opening of the Cosmopolitan Resort and Casino (3,000). In 2011, 246 hotel/motel rooms are expected to be added to the inventory. This includes the Hilton Branded Property (150) and the Marriott SpringHill Suites (96). Hotel room additions are expected to total 500 in 2012, with the addition of the Marriott Residence Inn.

Year	Total Rooms	New Rooms	New Jobs Implied	REMI Hotel Employment	REMI New Jobs Implied	Cumulative Additional Jobs After Hotel Adjustment
2009	148,941			165,354		
2010	151,941	3,000	4,536	163,496	-1,858	6,395
2011	152,187	246	372	164,837	1,341	5,425*
2012	152,687	500	756	167,144	2,307	3,875*

* Note: The new jobs implied by the room additions are less than the REMI hotel employment.

In addition to the projected new hotel/motel rooms for 2009 to 2012, the LVCVA lists a number of proposed projects with a yet-to-be-determined completion date. The LVCVA anticipates that these proposed future projects will create an additional 38,400 rooms. However, due to the current circumstances in the economy, we do not account for these proposed projects in the nearest upcoming years in our forecast. The modeled total new hotel rooms are 3,746 for the period 2009 to 2012.

The model adjustment for new hotel construction uses a ratio of job-to-room. We assume a jobs-to-room ratio of approximately 1.5, which was obtained in the following

manner⁵: First, we expect new hotel rooms to create new jobs in hotel services. Using historical information from 2005-2009, we take the historical average ratio of annual accommodation employment from DETR divided by the total number of hotel rooms. From this calculation we obtain a jobs-to-room multiplier of roughly 1.3 for hotel services. New hotel rooms will also generate secondary economic activity, and, hence, additional jobs in other sectors. For example, increased tourism activity from new hotel rooms will also increase the demand for food services and other tourism-related industries. We account for these new jobs in the following manner: Each industry's location quotient⁶ is used to estimate the portion of the industry's employment attributable to tourism activity. We then take the historical average ratio of the annual employment in each of these sectors, which is attributable to tourism activity, divided by the total hotel rooms. The sum of the ratios for the food services and other tourism-related industries is approximately 0.2. This, together with the jobs-to-room multiplier of 1.3 for hotel services, produces the overall jobs-to-room ratio of approximately 1.5. The jobs-to-room multiplier is then used as the multiplicand times the number of additional rooms *over and above* the rooms and jobs already accounted for in the model. These results are shown in Table 5, revealing an increase of about 2,307 jobs by 2012.

E. Transportation and infrastructure improvements

Clark County has continued to invest in transportation infrastructure such as roads, highways, and mass transit. The model assumes that public-infrastructure investment will continue at a pace consistent with the model history. Thus, some local spending on public

⁵ The detailed computation of the jobs-to-room ratio is provided in the Appendix A at the end of the report.

⁶ The Location Quotient (LQ) compares Clark County's employment in a given industry sector to that of the nation. An LQ greater than 1 indicates that the area has proportionately more workers than the nation employed in that specific industry sector. This implies that the area is producing more than is consumed by its residents. Hence, the portion of the LQ that is above 1 represents the proportion of the industry's employment attributable to tourism activity.

infrastructure, such as road building and additional services, is built into the model. However, one-time monies tend to come from outside the region (for example, federal transportation funding). These large, special projects need to be accounted for in the forecast.

Whereas some of the planned expenditures are “new money,” the remaining would have been spent for other purposes. Thus, in order to avoid double-counting and retain a balanced budget, the expenditures are entered in the REMI model as translator policy variables. The model then computes the actual new expenditures over and above what is already included and returns them as policy variables.

The estimated federal funding in transportation-infrastructure investment expenditures is about \$395 million in 2010, \$87 million in 2011, \$159 million in 2012, \$951 million between 2013 and 2020, and \$1.01 billion between 2021 and 2030.⁷ These expenditures are annualized and included in the REMI investment model as new construction projects.

F. Amenity adjustments

For over a decade, the Las Vegas metropolitan area has been one of the fastest-growing communities in the U.S. This has helped maintain a vibrant economy, but research has shown that rapid urban expansion is frequently correlated with a diminishing quality of life as congestion, deteriorating air quality, and a shortage of public services take their toll on local populations. These “negative externalities” arising from rapid growth impose costs on local residents, making the county less attractive to those living here and potential in-migrants. As a result, people are more likely to relocate to areas with a higher quality of life, all else being equal.

⁷ Source: Regional Transportation Commission.
Center for Business and Economic Research
University of Nevada, Las Vegas

To account for the rising social costs of negative externalities from growth, we include an amenity factor in the model. We assume that the social costs of growth rise by 0.033 percent each year. The amenity factor is introduced in the model through the wage equations, effectively causing real wages to fall relative to other regions. Falling wages means less economic migration, and population growth slows as the desirability of Clark County falls.

G. Rebasing the population forecast

Each year, Clark County Comprehensive Planning (CCCP) estimates the Clark County population using the housing-units method. In 2009, the vacancy rates were determined from electrical usage for single-family residential units and the CB Richard Ellis vacancy numbers were used for multi-family units. This estimate is used instead of the 2000 census estimates, which are outdated.

We traditionally rebase the population forecast by adding the forecasted annual changes in population to the most recent population estimate. The most recent estimate available for use in rebasing this forecast is CCCP's July 1, 2009, estimate of 2,006,347 people. Hence, we adjust the population forecasts upward by 91,441, so that we forecast that population will grow from roughly 2 million in 2010 to about 3.93 million in 2050. See Table 5.

Year	Population REMI Forecast	Population Rebased Forecast	Change in Population Rebased Forecast	Growth in Population Rebased Forecast
2009	1,915,000	2,006,347*		
2010	1,948,000	2,039,000	32,653	1.6%
2011	1,980,000	2,071,000	32,000	1.6%
2012	2,014,000	2,105,000	34,000	1.6%
2013	2,048,000	2,139,000	34,000	1.6%
2014	2,085,000	2,176,000	37,000	1.7%
2015	2,123,000	2,214,000	38,000	1.7%
2016	2,162,000	2,253,000	39,000	1.8%
2017	2,202,000	2,293,000	40,000	1.8%
2018	2,243,000	2,334,000	41,000	1.8%
2019	2,284,000	2,375,000	41,000	1.8%
2020	2,327,000	2,418,000	43,000	1.8%
2021	2,370,000	2,461,000	43,000	1.8%
2022	2,413,000	2,504,000	43,000	1.7%
2023	2,458,000	2,549,000	45,000	1.8%
2024	2,503,000	2,594,000	45,000	1.8%
2025	2,548,000	2,639,000	45,000	1.7%
2026	2,594,000	2,685,000	46,000	1.7%
2027	2,641,000	2,732,000	47,000	1.8%
2028	2,688,000	2,779,000	47,000	1.7%
2029	2,736,000	2,827,000	48,000	1.7%
2030	2,785,000	2,876,000	49,000	1.7%
2031	2,834,000	2,925,000	49,000	1.7%
2032	2,884,000	2,975,000	50,000	1.7%
2033	2,935,000	3,026,000	51,000	1.7%
2034	2,986,000	3,077,000	51,000	1.7%
2035	3,038,000	3,129,000	52,000	1.7%
2040	3,303,000	3,394,000	54,000	1.6%
2045	3,573,000	3,665,000	54,000	1.5%
2050	3,834,000	3,926,000	51,000	1.3%

* Clark County Comprehensive Planning housing-unit-based population estimate.

IV. Analysis of the Economic and Demographic Forecast

The forecast predicts steady population growth for Southern Nevada over the forecast period extending out to 2050. However, the rate of growth, which has been decidedly greater than the national average over the past fifty years, is beginning to moderate and

move toward the national rate of growth. The economic forecast calls for more job losses in 2010 and the beginning of the road to recovery starting in 2011. Tables 5 through 7, respectively, report the population, employment, and gross regional product (GRP) predictions for Clark County from the calibrated model.

A. Population

The current economic recession, which began in 2008 and appears to have reached a lower point in 2009, resulted in a negative population-growth rate in 2008 and a moderate increase in population during 2009. Continuing this trend, the population in Clark County is predicted to grow at a rate of 1.6 percent between 2010 and 2013. In the following years, the population-growth rate gradually rises as the Clark County economy begins to recover. By 2020, population growth is at 1.8 percent. By 2025, growth (at 1.8 percent) begins to taper off as the Clark County economy is expected to mature; and it reaches 1.3 percent, just above the estimated long-term national population growth rate of 1 percent, by 2050. This type of long-term growth pattern is expected as our economy matures, and is very similar to previous forecasts.

Clark County is forecasted to experience increasing in-migration, in the short-term, as the local economy recovers from the current recession. In the early years of the forecast, economic migrants, who constitute the bulk of total in-migrants, are drawn by the low housing prices and high wages in Clark County relative to the rest of the nation. This pattern continues until the local economy reaches maturity. By 2040, the count of in-migrants reaches its peak and begins to decline thereafter.

B. Employment

The forecast predicts a leveling of job losses in 2010 and 2011 followed by steady employment growth in the near term. The employment-growth forecast is lower than last

year's forecast. This is because last year's 2009 forecasted employment-growth rate was very optimistic.⁸ Employment growth reaches a peak of 1.5 percent in 2012 and then eventually stabilizes at around 1 percent as the Southern Nevada economy returns to maturity. See Table 6.⁹

The decline in the employment-population ratio over time can be attributed to three factors. First, employment growth slows as the economy and the gaming industry mature whereas the population base continues to grow. Second, the employment-population ratio is expected to fall as the baby boomers begin retiring in the coming two decades. Third, the increase in the Hispanic-only population over the last decade has led to an increase in the number of children in Clark County. The increase in the children population raises the population base and lowers the employment-population ratio.

C. Gross regional product

Gross regional product (GRP) is defined as the dollar value of all final goods and services for sale in a regional economy. As such, it reflects the output of a local economy and avoids double-counting initial and intermediate goods. The forecast for growth in the Clark County GRP, shown in Table 7, basically mirrors the growth pattern of local employment, but also reflects continued growth in productivity throughout the majority of the forecast. The GRP-growth forecast starts at 1.7 percent in 2010, and climbs up to 3 percent by 2014. The GRP forecast then cycles through a low of 2.5 percent and finally stabilizes at around 3 percent in 2031.

⁸ We predicted that employment would grow at a 0.6 percent rate in 2009 when the actual employment growth rate in 2009 was -8.1 percent.

⁹ Unadjusted employment forecasts are shown in Appendix B.

Table 6: Employment History and Forecasts

Year	Employment Forecast	Change in Employment Forecast	Growth in Employment Forecast	Employment-Population Ratio Forecast**
2007	1,181,330*			0.65*
2008	1,159,000	-22,330	-1.9%	0.62
2009	1,064,000	-95,000	-8.2%	0.56
2010	1,056,000	-8,000	-0.8%	0.54
2011	1,065,000	9,000	0.9%	0.54
2012	1,080,000	15,000	1.4%	0.54
2013	1,093,000	13,000	1.2%	0.53
2014	1,110,000	17,000	1.6%	0.53
2015	1,124,000	14,000	1.3%	0.53
2016	1,136,000	12,000	1.1%	0.53
2017	1,147,000	11,000	1.0%	0.52
2018	1,159,000	12,000	1.0%	0.52
2019	1,172,000	13,000	1.1%	0.51
2020	1,181,000	9,000	0.8%	0.51
2021	1,190,000	9,000	0.8%	0.50
2022	1,200,000	10,000	0.8%	0.50
2023	1,211,000	11,000	0.9%	0.49
2024	1,222,000	11,000	0.9%	0.49
2025	1,233,000	11,000	0.9%	0.48
2026	1,245,000	12,000	1.0%	0.48
2027	1,259,000	14,000	1.1%	0.48
2028	1,272,000	13,000	1.0%	0.47
2029	1,287,000	15,000	1.2%	0.47
2030	1,302,000	15,000	1.2%	0.47
2031	1,319,000	17,000	1.3%	0.47
2032	1,336,000	17,000	1.3%	0.46
2033	1,353,000	17,000	1.3%	0.46
2034	1,372,000	19,000	1.4%	0.46
2035	1,389,000	17,000	1.2%	0.46
2040	1,489,000	20,000	1.4%	0.45
2045	1,592,000	20,000	1.3%	0.45
2050	1,688,000	19,000	1.1%	0.44

*Actual employment

** The unrebased population forecast was used for consistency.

Table 7: Gross Regional Product History and Forecasts

Year	GRP (Billions of Chained 2000\$) REMI Forecast	Change in GRP (Billions of Chained 2000\$) REMI Forecast	Growth in GRP (Billions of Chained 2000\$) REMI Forecast	GRP per Capita (Chained 2000\$) REMI Forecast
2007	80.838*			40,489*
2008	79.835	-1.00	-1.2%	40,196
2009	72.709	-7.13	-8.9%	36,239
2010	73.975	1.27	1.7%	36,281
2011	76.133	2.16	2.9%	36,767
2012	78.326	2.19	2.9%	37,218
2013	80.410	2.08	2.7%	37,588
2014	82.826	2.42	3.0%	38,068
2015	85.238	2.41	2.9%	38,504
2016	87.711	2.47	2.9%	38,931
2017	89.914	2.20	2.5%	39,213
2018	92.286	2.37	2.6%	39,543
2019	94.763	2.48	2.7%	39,893
2020	97.133	2.37	2.5%	40,173
2021	99.640	2.51	2.6%	40,488
2022	102.189	2.55	2.6%	40,800
2023	104.849	2.66	2.6%	41,135
2024	107.655	2.81	2.7%	41,506
2025	110.494	2.84	2.6%	41,868
2026	113.499	3.01	2.7%	42,269
2027	116.660	3.16	2.8%	42,703
2028	119.955	3.30	2.8%	43,160
2029	123.426	3.47	2.9%	43,654
2030	127.004	3.58	2.9%	44,158
2031	130.790	3.79	3.0%	44,707
2032	134.743	3.95	3.0%	45,285
2033	138.838	4.10	3.0%	45,882
2034	143.10	4.26	3.1%	46,504
2035	147.440	4.34	3.0%	47,121
2040	172.139	5.24	3.1%	50,713
2045	200.890	5.99	3.1%	54,820
2050	232.378	6.50	2.9%	59,192

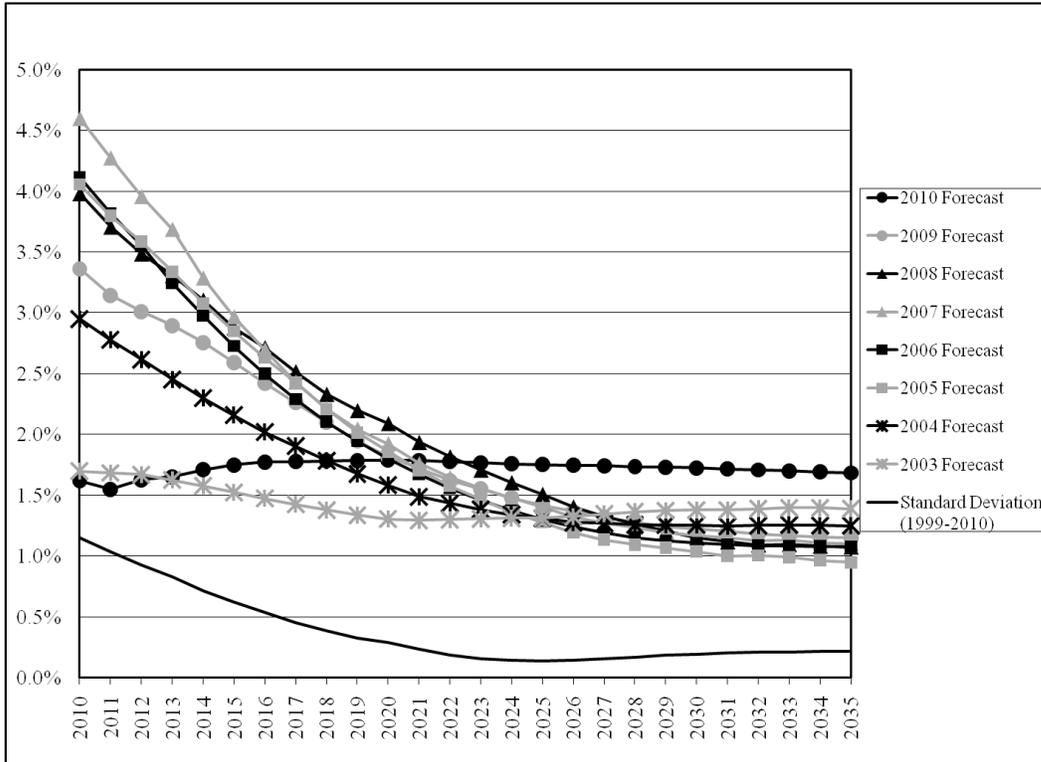
* Actual GRP.

V. Comparing Current Forecast with Previous Years of the Forecast

This section compares this year's final population-growth forecasts with the final population-growth forecasts from previous years. This exercise allows us to assess the consistency of the forecast methodology and to assess the variability in the population-growth forecasts over the last ten years. Figure 3 shows the population-growth rate forecasts obtained from 2005 to 2010. Figure 3 also shows the standard deviation of the population-growth-rate forecast in the last years (1999-2010).¹⁰ The population-growth-rate forecasts exhibit a high level of variability in the near term. The standard deviation of the population-growth-rate forecast for the year 2010 is roughly 1.2 percent. This reflects a high degree of uncertainty in the short-term forecast (See Section VI). The variability among the population-growth-rate forecasts falls dramatically in the long term. By 2025, the forecasted growth rates converge to about 1.5 percent, with a standard deviation of 0.25 percent. Hence, there is a large degree of consistency in the long-term growth predictions obtained during the last ten years, as evidenced by the low standard deviation among the forecasts. This observation further confirms the fact that our forecasts are primarily meant to be long-run planning tools.

¹⁰ The standard deviation is a measure of the variability among data points. For data that follow a normal distribution, 99.7% of data points will fall within approximately 3 standard deviations of the mean.

Figure 3: Clark County Historic Population-Growth-Rate Forecasts: 2010-2035



VI. Risks to the Forecast

Our Southern Nevada population forecasts rest on economic and demographic models set in the context of a structured framework. This structure keeps our long-term forecasts consistent with our objectives. We have separated the long-term trend from the noise that one finds in time-series data. These noise factors include the business cycle and seasonal and irregular events. As a regional economy, Las Vegas depends on the spending of people who live outside the region. A rising national income gives rise to more travel to Las Vegas. On the one hand, special events such as periodic boxing matches can attract visitors that will drive local occupancy rates above normal levels. The aftermath of 9/11 curtailed travel to and from Las Vegas, driving revenues down below trend for some months and setting the economy and demography off course for a while. In short,

population projections should focus on the long term, though seeing through the short-term ups and downs may not be easy.

The potential risks to the current forecast arise from both short-term and long-term factors. In the short term, the reliability of the forecast rests on the adjustments made to the model. These adjustments allow us to recalibrate the model with the most recent information. The two adjustments that have the most impact on the short-term forecast are the migration and employment adjustments. While we see no issue in the DETR employment data, a potential risk arises with the migration adjustment. A limitation of the IRS county migration statistics is that they tend to underestimate international in-migration. This could especially be true in Clark County where the boom in the construction sector attracted many undocumented workers. Another potential risk arises from the short-term hotel adjustment. The hotel adjustment only takes into account the LVCVA's planned hotel room additions from projects currently under construction. We do not, however, include hotel room additions from planned projects that have not yet started or have been halted. To the extent that a quick turnaround in the local economy brings these projects online, the short-term forecast will change.

The reliability of the long-term forecast hinges on the new growth path that will emerge from the current economic recession. Using the five-year period of 2010 to 2014 as a window for looking at the future economy, we see a recovery from the current recession following a similar pattern as the national economy, an L-shaped recovery except with a longer phase in the base of the L. In other words, we see a slower recovery. This shape largely shows the greater difficulty of the Las Vegas housing market to recover. At midyear 2010, we still see a large oversupply of housing units with more foreclosures in sight. Overcoming these difficulties will take more time in Nevada than

elsewhere in the U.S., except for the housing bubble states of Arizona, California, and Florida.

The lower growth path recently experienced in Southern Nevada arises from the large jump in room inventory for the Las Vegas Strip. Roughly 3,000 new hotel rooms will be added in 2010. This comes at the time when consumers have experienced a recession and have cut back on spending, mainly big-ticket and discretionary items. A prudent assumption would be that consumers will be more hesitant to spend for travel and tourism than before the recession. The current recession is likely to result in a structural change in consumer spending habits. As a result, the spending for each visitor may remain at a lower level than during the boom period, and it may be some time before consumers return to earlier spending levels.

The long-term path, as shown in the trend estimates, arises from the regional economy's maturity. This maturation, under way for some time, has spread casino gambling throughout the U.S., even though visitor growth has continued in Las Vegas. Many argued that more gamblers in outlying venues created a larger base for Las Vegas to attract. Others foresaw cannibalization and direct competition that would cut into Las Vegas' economic well-being. The Las Vegas market has enjoyed continued success, but the region no longer has a monopoly with few impediments to success. Competitive markets for casino visitors will constrain growth, to be sure, but it need not prove a fatal flaw so long as the Las Vegas market remains quick to change and answer challenges and opens up to new ideas that will grow the market. Last, the availability of capital, long a factor in the growth of Las Vegas, became abundant during the past few years, contributing to investments that might not otherwise have happened.

The current recession affects population. A severe recession drives up unemployment rates and places people at economic risk. During such periods, one might expect slower rates of migration as people tend to be less sure of their economic environment in locations with which they are not as familiar. For economies such as Clark County, where there is a fairly higher percentage of the work force in construction than the national economy, the stoppage of construction of big projects is likely to result in out-migration because workers in this industry are accustomed to moving to find work. The effect of the current economic environment is to keep the population levels below the trend line shown in the baseline forecast. Again, these recent events are natural swings of a couple years' duration and should be fully expected over the forecast range.

Therefore, although we feel the population forecasts are sound, there are significant risks to the forecasts which could lead to either over- or underestimated growth. We say again, however, that these risks tend to arise from short-run uncertainty; whereas, our forecasts are primarily meant to be long-run planning tools.

VII. Conclusion

The latest REMI model projects long term population-growth patterns that are consistent with previous population forecasts. The short-term population-growth forecast is less than last year's forecast. This is a reflection of the new data added to the model that takes into account the current economic recession. However, in the long term, the current population-growth forecast is similar to last year's forecast. We note that, despite short-term economic uncertainties and model difficulties, the long-term population estimate, which is the main focus of this forecasting exercise, is fairly consistent with past forecasts. By 2035, we predict that Clark County's population will reach 3.13 million. In 2050, Clark County is expected to have 3.93 million residents. The model continues to

predict changes in the economy as the county grows and matures. Thus, the breakneck percentage annual growth rates seen in the past two decades are expected to moderate over the long term.

Appendices

Appendix A: Computation of the Jobs-to-Room Ratio

The adjustment for new hotel construction uses a ratio of jobs to rooms. Two issues arise in the computation of the jobs-to-room ratio. First, we expect new hotel rooms to create new jobs in hotels services. Second, new hotel rooms will also generate economic activity, and hence, additional jobs in other sectors. Increased tourism activity from new hotel rooms will increase the demand for food services and other tourism-related industries. Hence, we need an approach that accounts for these two issues. We propose the following formula:

$$\text{Jobs - to - Room Ratio} = \frac{\left(\begin{array}{l} \text{Total} \\ \text{employment} \\ \text{due to tourism} \end{array} \right)}{\left(\begin{array}{l} \text{LVCVA} \\ \text{room count} \end{array} \right)},$$

where,

$$\left(\begin{array}{l} \text{Total} \\ \text{employment} \\ \text{due to tourism} \end{array} \right) = \left(\begin{array}{l} \text{Accommodation} \\ \text{employment} \end{array} \right) + \left(\begin{array}{l} \text{Employment} \\ \text{in tourism -} \\ \text{related} \\ \text{industries} \end{array} \right) \times \left(\begin{array}{l} \text{Share of} \\ \text{employment} \\ \text{due to tourism} \end{array} \right)$$

(1) DETR Employment (thousands)						
Industrial Classification	2005	2006	2007	2008	2009	Average 2005-2009
Accommodation	177.3	181.8	179.7	174.1	162.3	175.0
Clothing and clothing accessories	13.8	14.4	15.6	16.3	15.7	15.2
Transit, ground pass transportation	11.6	12.1	12.8	12.8	12.3	12.3
Food services, drinking places	66.9	71.5	74.5	77.1	72.3	72.5
Performing arts, spectator sports	18.1	18.5	19.0	18.2	16.1	18.0

(2) Proportion of employment due to tourism* (= Location quotient** - 1)						
Industrial Classification	2005	2006	2007	2008	2009***	Average 2005-2009
Accommodation	1	1	1	1	1	1
Clothing and clothing accessories	0.405	0.366	0.449	0.583	0.698	0.500
Transit, ground pass transportation	1	1	1	1	1	1
Food services, drinking places	0.047	0.055	0.079	0.132	0.143	0.091
Performing arts, spectator sports	0.377	0.328	0.340	0.298	0.284	0.325

*Maximum value = 1. Minimum value = 0.

** The Location Quotient (LQ) compares Clark County's employment in a given industry sector to that of the nation. An LQ greater than 1 indicates that the area has proportionately more workers than the nation employed in that specific industry sector. This implies that the area is producing more than is consumed by its residents. The portion of the LQ that is above 1 represents the proportion of the industry's employment attributable to tourism activity.

*** Based on employment through the first three quarters of 2009. Calculated using BLS Quarterly Census of Wage and Employment data.

Employment due to tourism (thousands) = (1) x (2)						
Industrial Classification	2005	2006	2007	2008	2009*	Average 2005-2009
Accommodation	177.3	181.8	179.7	174.1	162.3	175.0
Clothing and clothing accessories	5.6	5.3	7.0	9.5	11.0	7.7
Transit, ground pass transportation	11.6	12.1	12.8	12.8	12.3	12.3
Food services, drinking places	3.2	3.9	5.9	10.2	10.3	6.7
Performing arts, spectator sports	6.8	6.1	6.5	5.4	4.6	5.9
Total employment due to tourism	204.5	209.2	211.8	212.1	200.4	207.6

*Based on the location quotient derived for the first three quarters of 2009.

Employment due to one hotel room						
Industrial Classification	2005	2006	2007	2008	2009	Average 2005-2009
Total employment due to tourism	204.5	209.2	211.8	212.1	200.4	207.6
LVCVA hotel room count (thousands)	133.2	132.6	132.9	140.5	148.9	137.6
Jobs-to-room ratio (employment due to tourism/hotel rooms)	1.5	1.6	1.6	1.5	1.3*	1.5**

*Based on the location quotient derived for the first three quarters of 2009.

** This value is rounded to one significant digit.

Appendix B: Detailed Result Tables

Table 8: Out-of-the-Box Clark County Population and Population-Growth Forecasts from REMI Models LHY2006 and LHY2007

Year	LHY2007 Population (Thousands)	LHY2006 Population (Thousands)	LHY2007 Population Growth	LHY2006 Population Growth
2008	1,908	1,918		
2009	1,985	1,985	4.0%	3.5%
2010	2,059	2,049	3.7%	3.2%
2011	2,133	2,112	3.6%	3.1%
2012	2,206	2,174	3.4%	2.9%
2013	2,279	2,235	3.3%	2.8%
2014	2,351	2,295	3.1%	2.7%
2015	2,421	2,354	3.0%	2.6%
2016	2,491	2,412	2.9%	2.5%
2017	2,558	2,467	2.7%	2.3%
2018	2,625	2,521	2.6%	2.2%
2019	2,691	2,572	2.5%	2.0%
2020	2,756	2,621	2.4%	1.9%
2021	2,820	2,669	2.3%	1.8%
2022	2,883	2,716	2.2%	1.8%
2023	2,945	2,761	2.2%	1.7%
2024	3,007	2,806	2.1%	1.6%
2025	3,068	2,850	2.0%	1.6%
2026	3,129	2,893	2.0%	1.5%
2027	3,190	2,935	1.9%	1.5%
2028	3,251	2,977	1.9%	1.4%
2029	3,312	3,018	1.9%	1.4%
2030	3,373	3,060	1.8%	1.4%
2031	3,434	3,101	1.8%	1.3%
2032	3,496	3,143	1.8%	1.4%
2033	3,558	3,184	1.8%	1.3%
2034	3,621	3,226	1.8%	1.3%
2035	3,684	3,268	1.7%	1.3%
2040	4,010	3,482	1.7%	1.3%
2045	4,348	3,695	1.6%	1.1%
2050	4,677	3,884	1.4%	0.9%

Note: Out-of-the-box refers to the model prior to recalibration. These numbers are not the final forecast.

Table 9: Detailed Final Population Forecast: 2000 – 2050

Year	Population Forecast	Change in Population Forecast	Growth in Population (Percent)
2000	1,428,690*	107,373	8.1%
2001	1,498,274*	69,584	4.9%
2002	1,578,332*	80,058	5.3%
2003	1,641,529*	63,197	4.0%
2004	1,747,025*	105,496	6.4%
2005	1,815,700*	68,675	3.9%
2006	1,925,654*	109,954	6.1%
2007	1,996,542*	70,888	3.7%
2008	1,986,146*	-10,396	-0.5%
2009	2,006,347*	20,201	1.0%
2010	2,039,000	32,595	1.6%
2011	2,071,000	32,000	1.6%
2012	2,105,000	34,000	1.6%
2013	2,139,000	34,000	1.6%
2014	2,176,000	37,000	1.7%
2015	2,214,000	38,000	1.7%
2016	2,253,000	39,000	1.8%
2017	2,293,000	40,000	1.8%
2018	2,334,000	41,000	1.8%
2019	2,375,000	41,000	1.8%
2020	2,418,000	43,000	1.8%
2021	2,461,000	43,000	1.8%
2022	2,504,000	43,000	1.7%
2023	2,549,000	45,000	1.8%
2024	2,594,000	45,000	1.8%
2025	2,639,000	45,000	1.7%
2026	2,685,000	46,000	1.7%
2027	2,732,000	47,000	1.7%
2028	2,779,000	47,000	1.7%
2029	2,827,000	48,000	1.7%
2030	2,876,000	49,000	1.7%
2031	2,925,000	49,000	1.7%
2032	2,975,000	50,000	1.7%
2033	3,026,000	51,000	1.7%
2034	3,077,000	51,000	1.7%
2035	3,129,000	52,000	1.7%
2036	3,181,000	52,000	1.7%
2037	3,234,000	53,000	1.7%
2038	3,287,000	53,000	1.6%
2039	3,341,000	54,000	1.6%
2040	3,394,000	53,000	1.6%
2041	3,448,000	54,000	1.6%
2042	3,502,000	54,000	1.6%
2043	3,557,000	55,000	1.6%
2044	3,611,000	54,000	1.5%
2045	3,665,000	54,000	1.5%
2046	3,718,000	53,000	1.4%
2047	3,771,000	53,000	1.4%
2048	3,823,000	52,000	1.4%
2049	3,875,000	52,000	1.4%
2050	3,926,000	51,000	1.3%

*2000-2009 are historical estimates from Clark County Comprehensive Planning.

Note: The average annual forecasted growth rate is 1.7%.

Table 10: Las Vegas Room Inventory Summary				
	Additional Convention Space (Sq. Ft.)	Additional Hotel/Motel Rooms (1)	Additional Time-Share Units (2)	Estimated Year-End Hotel/Motel Room Count
Las Vegas Room Inventory (December 31, 2009)				148,941
Projects scheduled to open in 2010				
Planned (as of December 31, 2010)	182,700	3,000	400	151,941
Projects scheduled to open in 2011				
Planned (as of December 31, 2010)	4,000	246	–	152,187
Projects scheduled to open in 2012				
Planned (as of December 31, 2010)	–	500	400	152,687
Projects scheduled to open in 2010 – 2012				
Planned (as of December 31, 2010)	186,700	3,746	800	152,687

Source: Las Vegas Valley Convention and Visitors Authority.

NOTE: Both time-share and condo-hotel units are properties that may be rented out to overnight lodgers.

1. Room count includes condo-hotel units that may be rented to overnight lodgers when individual condo owners place their units into a nightly inventory.
2. Time-share: Ownership is divided among multiple owners with each owning the unit for a short interval of time (typically a week).

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total employment	1055.854	1064.530	1080.049	1093.089	1109.957	1123.518	1136.482	1147.153	1159.114
Total employment as % of nation	0.603	0.597	0.600	0.601	0.604	0.607	0.610	0.612	0.614
Private nonfarm employment	945.191	953.358	968.421	981.071	997.566	1010.873	1023.652	1034.147	1045.780
Private nonfarm employment as % of nation	0.647	0.640	0.642	0.643	0.646	0.649	0.651	0.653	0.655
Gross domestic product	73.975	76.133	78.326	80.410	82.826	85.238	87.711	89.914	92.286
Personal income	77.358	81.956	87.200	92.797	99.018	105.489	112.392	119.416	126.903
Personal income as % of nation	0.598	0.598	0.602	0.606	0.611	0.616	0.621	0.624	0.628
Disposable personal income	69.394	73.556	78.288	83.343	88.952	94.793	101.026	107.346	114.086
PCE-price index	127.965	131.486	135.256	139.403	143.626	148.067	152.740	157.590	162.548
Real disposable personal income	54.229	55.943	57.881	59.786	61.933	64.020	66.143	68.117	70.186
Real disposable personal income as % of nation	0.599	0.599	0.603	0.607	0.612	0.617	0.622	0.625	0.629
Population	1947.501	1979.224	2013.093	2047.788	2084.320	2122.328	2161.527	2201.511	2242.367
Population as % of nation	0.626	0.630	0.634	0.639	0.643	0.649	0.654	0.659	0.665

Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total employment	1171.653	1180.569	1190.487	1200.267	1210.665	1222.098	1233.205	1245.410	1258.628
Total employment as % of nation	0.617	0.619	0.622	0.625	0.628	0.631	0.634	0.637	0.641
Private nonfarm employment	1057.945	1066.681	1076.335	1085.885	1096.011	1107.118	1117.945	1129.788	1142.597
Private nonfarm employment as % of nation	0.657	0.660	0.662	0.665	0.668	0.671	0.674	0.678	0.681
Gross domestic product	94.763	97.133	99.640	102.189	104.849	107.655	110.494	113.499	116.660
Personal income	134.891	142.986	151.674	160.828	170.637	181.168	192.295	204.356	217.366
Personal income as % of nation	0.632	0.637	0.641	0.645	0.649	0.654	0.658	0.663	0.668
Disposable personal income	121.281	128.577	136.411	144.668	153.519	163.024	173.071	183.969	195.730
PCE-price index	167.715	173.079	178.531	184.276	190.122	196.248	202.500	209.025	215.757
Real disposable personal income	72.314	74.288	76.407	78.506	80.748	83.070	85.467	88.013	90.717
Real disposable personal income as % of nation	0.633	0.637	0.641	0.645	0.650	0.654	0.658	0.663	0.668
Population	2284.004	2326.445	2369.549	2413.215	2457.442	2502.255	2547.678	2593.737	2640.483
Population as % of nation	0.671	0.676	0.682	0.688	0.694	0.700	0.706	0.713	0.719

¹¹ Note: The population forecast will differ from the forecast in Table 1. See page 18 for details on rebasing the forecast.

Variable	2028	2029	2030	2035	2040	2045	2050
Total employment	1272.477	1287.385	1302.475	1389.411	1488.773	1592.291	1688.199
Total employment as % of nation	0.644	0.648	0.652	0.670	0.688	0.702	0.708
Private nonfarm employment	1155.996	1170.395	1184.984	1268.823	1364.746	1465.245	1559.557
Private nonfarm employment as % of nation	0.685	0.688	0.692	0.710	0.727	0.740	0.743
Gross domestic product	119.955	123.426	127.004	147.440	172.139	200.890	232.378
Personal income	231.339	246.458	262.661	364.661	510.610	715.783	990.301
Personal income as % of nation	0.673	0.678	0.684	0.715	0.746	0.775	0.790
Disposable personal income	208.367	222.049	236.721	329.276	462.217	649.951	902.455
PCE-price index	222.722	229.971	237.422	279.128	328.923	388.477	459.673
Real disposable personal income	93.555	96.555	99.705	117.966	140.524	167.308	196.325
Real disposable personal income as % of nation	0.673	0.678	0.684	0.715	0.747	0.776	0.792
Population	2687.866	2735.946	2784.702	3037.511	3302.941	3573.095	3834.368
Population as % of nation	0.725	0.731	0.738	0.770	0.802	0.831	0.854

¹² Note: The population forecast will differ from the forecast in Table 1. See page 18 for details on rebasing the forecast.

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total employment	1055.854	1064.530	1080.049	1093.089	1109.957	1123.518	1136.482	1147.153	1159.114
Total employment as % of nation	0.603	0.597	0.600	0.601	0.604	0.607	0.610	0.612	0.614
Private nonfarm	945.191	953.358	968.421	981.071	997.566	1010.873	1023.652	1034.147	1045.780
Forestry, fishing, other	0.301	0.306	0.314	0.322	0.330	0.338	0.346	0.356	0.367
Mining	1.354	1.347	1.352	1.352	1.352	1.344	1.337	1.340	1.347
Utilities	3.025	3.017	3.025	3.036	3.043	3.038	3.029	3.037	3.049
Construction	72.395	72.217	73.754	74.927	76.147	77.038	77.801	78.148	78.511
Manufacturing	26.015	25.709	25.603	25.497	25.375	25.154	24.943	24.795	24.680
Wholesale trade	25.474	25.467	25.625	25.775	25.898	25.919	25.908	25.722	25.513
Retail trade	108.566	109.296	110.783	112.366	113.978	115.265	116.515	117.138	118.002
Transportation and warehousing	38.143	38.496	39.093	39.673	40.232	40.651	41.052	41.606	42.171
Information	13.198	13.150	13.206	13.277	13.355	13.394	13.438	13.394	13.342
Finance and insurance	47.295	46.775	46.524	46.231	45.912	45.418	44.886	44.248	43.583
Real estate and rental and leasing	70.510	72.035	74.028	76.053	78.109	79.937	81.724	83.288	85.013
Professional and technical services	52.764	53.813	55.237	56.642	58.000	59.127	60.181	61.584	62.905
Mgmt of companies and enterprises	15.267	15.378	15.561	15.724	15.855	15.911	15.945	16.114	16.247
Admin and waste services	64.986	65.428	66.325	67.217	68.086	68.709	69.252	69.822	70.422
Educational services	8.741	9.073	9.460	9.860	10.246	10.606	10.962	11.287	11.632
Health care and social assistance	75.028	77.251	80.051	83.005	86.023	88.867	91.735	93.945	96.377
Arts, entertainment, and recreation	32.673	33.476	34.485	35.543	36.592	37.547	38.496	39.261	40.079
Accommodation and food services	244.849	246.264	248.493	248.420	252.201	255.253	258.261	260.729	263.614
Other services, except govt	44.606	44.860	45.503	46.150	46.832	47.358	47.841	48.333	48.926
Government	110.353	110.867	111.327	111.721	112.099	112.357	112.548	112.727	113.059
State and local	85.791	86.507	87.214	87.868	88.513	89.060	89.539	89.978	90.517
Federal civilian	12.319	12.282	12.220	12.149	12.073	11.983	11.892	11.818	11.771
Federal military	12.243	12.078	11.893	11.704	11.513	11.314	11.117	10.931	10.771
Farm	0.309	0.305	0.301	0.297	0.292	0.288	0.283	0.279	0.275

Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total employment	1171.653	1180.569	1190.487	1200.267	1210.665	1222.098	1233.205	1245.410	1258.628
Total employment as % of nation	0.617	0.619	0.622	0.625	0.628	0.631	0.634	0.637	0.641
Private nonfarm	1057.945	1066.681	1076.335	1085.885	1096.011	1107.118	1117.945	1129.788	1142.597
Forestry, fishing, other	0.378	0.389	0.399	0.410	0.422	0.435	0.447	0.461	0.476
Mining	1.352	1.352	1.356	1.359	1.363	1.365	1.369	1.375	1.379
Utilities	3.066	3.071	3.080	3.087	3.093	3.105	3.113	3.125	3.135
Construction	78.878	78.975	79.118	79.226	79.373	79.578	79.774	79.996	80.355
Manufacturing	24.574	24.378	24.212	24.042	23.893	23.763	23.633	23.522	23.435
Wholesale trade	25.286	24.955	24.626	24.280	23.932	23.595	23.241	22.902	22.574
Retail trade	118.969	119.551	120.256	120.972	121.766	122.710	123.637	124.713	125.939
Transportation and warehousing	42.736	43.157	43.607	44.048	44.502	44.983	45.444	45.942	46.459
Information	13.287	13.188	13.098	13.008	12.922	12.847	12.771	12.704	12.648
Finance and insurance	42.939	42.165	41.467	40.790	40.177	39.628	39.097	38.631	38.223
Real estate and rental and leasing	86.810	88.349	89.979	91.604	93.276	95.046	96.797	98.646	100.600
Professional and technical services	64.177	65.193	66.204	67.157	68.099	69.053	69.945	70.839	71.747
Mgmt of companies and enterprises	16.357	16.394	16.424	16.434	16.432	16.420	16.386	16.347	16.295
Admin and waste services	71.022	71.350	71.708	72.016	72.326	72.655	72.941	73.235	73.556
Educational services	11.987	12.299	12.614	12.934	13.256	13.592	13.925	14.262	14.592
Health care and social assistance	98.949	101.249	103.675	106.145	108.720	111.474	114.214	117.116	120.166
Arts, entertainment, and recreation	40.931	41.653	42.404	43.174	43.958	44.810	45.642	46.541	47.490
Accommodation and food services	266.682	268.974	271.540	274.115	276.862	279.798	282.702	285.884	289.216
Other services, except govt	49.567	50.039	50.567	51.087	51.640	52.261	52.870	53.547	54.313
Government	113.437	113.622	113.891	114.125	114.400	114.731	115.015	115.380	115.794
State and local	91.083	91.482	91.939	92.361	92.809	93.303	93.752	94.264	94.819
Federal civilian	11.734	11.682	11.643	11.603	11.570	11.541	11.510	11.488	11.468
Federal military	10.620	10.458	10.309	10.161	10.021	9.887	9.753	9.628	9.507
Farm	0.271	0.266	0.262	0.257	0.253	0.249	0.245	0.241	0.237

Variable	2028	2029	2030	2035	2040	2045	2050
Total employment	1272.477	1287.385	1302.475	1389.411	1488.773	1592.291	1688.199
Total employment as % of nation	0.644	0.648	0.652	0.670	0.688	0.702	0.708
Private nonfarm	1155.996	1170.395	1184.984	1268.823	1364.746	1465.245	1559.557
Forestry, fishing, other	0.491	0.507	0.525	0.629	0.767	0.942	1.150
Mining	1.387	1.394	1.401	1.438	1.473	1.508	1.529
Utilities	3.150	3.164	3.179	3.264	3.342	3.392	3.388
Construction	80.773	81.266	81.795	85.219	89.195	92.400	93.135
Manufacturing	23.365	23.312	23.266	23.298	23.650	24.227	24.851
Wholesale trade	22.251	21.944	21.640	20.332	19.366	18.643	17.937
Retail trade	127.248	128.701	130.224	139.521	150.860	162.574	172.054
Transportation and warehousing	46.992	47.548	48.098	51.073	54.208	57.400	60.620
Information	12.598	12.558	12.517	12.402	12.363	12.323	12.207
Finance and insurance	37.845	37.512	37.205	36.054	35.211	34.343	33.110
Real estate and rental and leasing	102.612	104.724	106.883	118.866	132.360	146.551	160.126
Professional and technical services	72.631	73.529	74.377	78.409	81.817	84.647	86.929
Mgmt of companies and enterprises	16.231	16.157	16.064	15.441	14.592	13.683	12.890
Admin and waste services	73.863	74.194	74.480	75.870	76.769	77.008	76.457
Educational services	14.926	15.269	15.601	17.352	19.343	21.451	23.375
Health care and social assistance	123.327	126.683	130.088	149.525	172.394	197.672	223.113
Arts, entertainment, and recreation	48.468	49.509	50.567	56.520	63.309	70.704	78.260
Accommodation and food services	292.733	296.464	300.212	321.520	345.551	371.143	397.997
Other services, except govt	55.103	55.960	56.860	62.089	68.177	74.636	80.428
Government	116.248	116.761	117.266	120.380	123.835	126.868	128.478
State and local	95.403	96.036	96.663	100.278	104.169	107.641	109.711
Federal civilian	11.453	11.443	11.431	11.421	11.432	11.426	11.393
Federal military	9.392	9.282	9.172	8.681	8.234	7.801	7.374
Farm	0.233	0.229	0.225	0.208	0.193	0.178	0.164

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Private nonfarm	945.191	953.358	968.421	981.071	997.566	1010.873	1023.652	1034.147	1045.780
Intermediate demand	209.413	209.472	212.272	214.877	217.660	219.704	221.640	223.611	225.649
Local consumption demand	368.826	372.353	379.823	387.348	395.054	401.485	407.581	411.989	417.323
Government demand	7.353	6.925	7.077	7.187	7.280	7.335	7.375	7.362	7.362
Investment activity demand	47.066	49.563	50.676	52.143	53.736	55.190	56.560	57.795	58.873
Exports to multiregions	4.420	4.504	4.592	4.667	4.751	4.820	4.881	4.931	4.988
Exports to rest of nation	283.797	285.340	287.759	287.892	291.275	293.696	296.084	298.380	301.031
Exports to rest of world	22.476	24.813	25.546	26.491	27.363	28.217	29.104	29.675	30.167
Exogenous industry sales	1.840	0.387	0.675	0.467	0.446	0.425	0.426	0.405	0.386
Exogenous industry demand	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Private nonfarm	1057.945	1066.681	1076.335	1085.885	1096.011	1107.118	1117.945	1129.788	1142.597
Intermediate demand	227.734	229.044	230.540	232.014	233.623	235.438	237.215	239.196	241.405
Local consumption demand	423.083	427.449	432.250	437.075	442.118	447.713	453.137	459.045	465.438
Government demand	7.368	7.353	7.346	7.340	7.339	7.343	7.346	7.355	7.369
Investment activity demand	59.876	60.608	61.323	61.975	62.618	63.279	63.899	64.560	65.266
Exports to multiregions	5.045	5.085	5.132	5.173	5.216	5.263	5.310	5.358	5.407
Exports to rest of nation	303.847	305.769	308.009	310.233	312.685	315.327	317.950	320.909	324.002
Exports to rest of world	30.624	31.023	31.401	31.758	32.110	32.468	32.815	33.194	33.547
Exogenous industry sales	0.367	0.349	0.334	0.318	0.302	0.288	0.274	0.172	0.163
Exogenous industry demand	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 13: Employment II continued							
Variable	2028	2029	2030	2035	2040	2045	2050
Private nonfarm	1155.996	1170.395	1184.984	1268.823	1364.746	1465.245	1559.557
Intermediate demand	243.738	246.288	248.868	264.369	283.292	303.868	323.995
Local consumption demand	472.053	479.164	486.425	527.612	573.999	621.609	662.689
Government demand	7.385	7.406	7.427	7.572	7.740	7.875	7.907
Investment activity demand	65.993	66.767	67.557	71.978	76.415	80.014	81.037
Exports to multiregions	5.455	5.505	5.551	5.817	6.121	6.476	6.883
Exports to rest of nation	327.318	330.862	334.401	355.024	379.271	405.846	435.715
Exports to rest of world	33.899	34.255	34.614	36.450	37.907	39.557	41.331
Exogenous industry sales	0.155	0.148	0.141	0.000	0.000	0.000	0.000
Exogenous industry demand	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Personal consumption expenditures	67.153	69.484	72.195	74.958	77.865	80.842	83.920	86.457	89.354	92.484	95.538	98.809	102.275
Vehicle & parts	3.086	3.302	3.489	3.676	3.902	4.140	4.390	4.531	4.708	4.903	5.090	5.298	5.520
Computers & furniture	6.173	6.830	7.572	8.368	9.235	10.168	11.181	11.990	12.897	13.884	14.898	15.978	17.169
Other durables	1.735	1.800	1.900	2.001	2.111	2.222	2.334	2.426	2.525	2.628	2.728	2.832	2.945
Food & beverages	8.261	8.436	8.636	8.832	9.033	9.223	9.407	9.623	9.890	10.179	10.447	10.737	11.033
Clothing & shoes	5.610	5.400	5.279	5.140	4.977	4.818	4.658	4.465	4.313	4.191	4.076	3.978	3.903
Gasoline & oil	1.878	1.941	2.002	2.049	2.096	2.144	2.192	2.241	2.294	2.348	2.401	2.456	2.512
Fuel oil & coal	0.061	0.052	0.054	0.055	0.056	0.057	0.058	0.059	0.060	0.061	0.062	0.063	0.064
Other nondurables	4.877	5.063	5.195	5.330	5.469	5.605	5.743	5.865	6.006	6.160	6.306	6.467	6.636
Housing	8.582	8.795	9.093	9.383	9.687	9.986	10.286	10.549	10.845	11.157	11.457	11.775	12.097
Household operation	2.855	2.921	3.008	3.098	3.185	3.268	3.351	3.424	3.504	3.588	3.665	3.747	3.829
Transportation	2.471	2.530	2.603	2.677	2.751	2.824	2.896	2.957	3.026	3.097	3.164	3.235	3.308
Medical care	10.700	11.157	11.623	12.110	12.611	13.117	13.635	14.088	14.582	15.103	15.611	16.146	16.689
Other services	10.864	11.258	11.741	12.239	12.753	13.270	13.789	14.238	14.704	15.183	15.632	16.097	16.570
Gross private domestic fixed investment	13.616	14.988	15.839	16.821	17.912	19.095	20.369	21.515	22.619	23.744	24.809	25.917	27.082
Residential	2.240	2.703	2.791	2.899	3.019	3.140	3.256	3.356	3.456	3.554	3.644	3.733	3.820
Nonresidential structures	2.597	2.451	2.475	2.533	2.606	2.683	2.746	2.791	2.821	2.866	2.889	2.928	2.946
Nonresidential equipment	8.779	9.834	10.572	11.389	12.287	13.272	14.368	15.368	16.342	17.323	18.276	19.257	20.316
Change in private inventories	0.077	0.063	0.058	0.054	0.049	0.045	0.041	0.040	0.040	0.040	0.040	0.040	0.041
Exogenous final demand	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Government consumption expenditures	10.936	10.814	11.032	11.227	11.407	11.570	11.738	11.860	12.019	12.189	12.341	12.504	12.691
Federal military	3.828	3.820	3.871	3.919	3.963	4.002	4.048	4.071	4.105	4.141	4.169	4.200	4.244
Federal civilian	1.200	1.196	1.203	1.208	1.211	1.213	1.215	1.228	1.244	1.262	1.278	1.295	1.315
State and local government	5.908	5.798	5.958	6.100	6.233	6.355	6.475	6.561	6.669	6.787	6.894	7.009	7.132
Total exports	39.256	40.365	41.270	41.913	42.919	43.915	44.957	45.955	46.984	48.034	49.025	50.066	51.107
Total imports	57.063	59.580	62.069	64.562	67.326	70.229	73.313	75.913	78.731	81.728	84.622	87.696	91.006

Variable	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040	2045	2050
Personal consumption expenditures	105.935	109.846	113.828	118.135	122.729	127.508	132.585	137.939	169.392	207.955	253.908	302.520
Vehicle & parts	5.763	6.024	6.287	6.589	6.914	7.242	7.588	7.979	10.185	12.975	16.134	18.223
Computers & furniture	18.447	19.805	21.229	22.758	24.430	26.174	28.035	30.003	41.914	57.908	78.439	102.663
Other durables	3.061	3.186	3.312	3.448	3.597	3.750	3.916	4.091	5.122	6.204	7.444	8.579
Food & beverages	11.339	11.667	11.993	12.336	12.697	13.077	13.476	13.882	16.183	18.882	21.911	24.992
Clothing & shoes	3.838	3.785	3.736	3.704	3.681	3.670	3.667	3.667	4.066	4.602	5.176	5.730
Gasoline & oil	2.569	2.627	2.685	2.772	2.836	2.901	2.968	3.069	3.595	3.795	4.196	4.601
Fuel oil & coal	0.065	0.066	0.067	0.069	0.070	0.071	0.072	0.074	0.084	0.088	0.095	0.101
Other nondurables	6.817	7.012	7.207	7.419	7.645	7.881	8.138	8.407	9.984	11.807	13.936	16.149
Housing	12.429	12.780	13.133	13.504	13.898	14.305	14.732	15.175	17.644	20.471	23.545	26.619
Household operation	3.913	4.002	4.090	4.183	4.281	4.383	4.489	4.599	5.210	5.889	6.590	7.219
Transportation	3.382	3.462	3.540	3.624	3.711	3.801	3.896	3.992	4.524	5.108	5.710	6.257
Medical care	17.258	17.856	18.458	19.089	19.746	20.426	21.142	21.870	25.970	30.765	36.132	41.740
Other services	17.055	17.573	18.091	18.641	19.224	19.826	20.465	21.129	24.909	29.460	34.600	39.647
Gross private domestic fixed investment	28.323	29.581	30.872	32.250	33.705	35.187	36.733	38.321	47.307	57.539	68.680	78.828
Residential	3.907	3.997	4.086	4.179	4.278	4.380	4.489	4.602	5.241	5.911	6.528	6.812
Nonresidential structures	2.982	3.000	3.034	3.070	3.088	3.126	3.166	3.185	3.390	3.480	3.514	3.419
Nonresidential equipment	21.434	22.584	23.752	25.001	26.340	27.680	29.079	30.535	38.677	48.148	58.638	68.598
Change in private inventories	0.041	0.041	0.041	0.041	0.041	0.041	0.042	0.042	0.042	0.042	0.040	0.038
Exogenous final demand	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Government consumption expenditures	12.885	13.082	13.272	13.478	13.707	13.920	14.145	14.366	15.547	16.760	17.895	18.676
Federal military	4.287	4.327	4.364	4.403	4.453	4.492	4.535	4.571	4.765	4.931	5.058	5.109
Federal civilian	1.335	1.356	1.375	1.396	1.419	1.440	1.462	1.484	1.596	1.716	1.830	1.920
State and local government	7.263	7.399	7.533	7.679	7.834	7.988	8.147	8.311	9.186	10.112	11.007	11.647
Total exports	52.189	53.311	54.438	55.621	56.844	58.112	59.429	60.764	68.132	76.435	85.855	96.675
Total imports	94.525	98.206	101.957	106.026	110.366	114.813	119.507	124.428	152.980	186.592	225.488	264.359

Table 15: Income									
Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Personal income	77.358	81.956	87.200	92.797	99.018	105.489	112.392	119.416	126.903
Personal income as % of nation	0.598	0.598	0.602	0.606	0.611	0.616	0.621	0.624	0.628
Total earnings by place of work	55.872	58.611	62.049	65.625	69.766	74.014	78.521	83.151	88.120
Total wage and salary disbursements	42.806	44.982	47.708	50.546	53.850	57.250	60.867	64.571	68.552
Supplements to wages and salaries	9.072	9.593	10.212	10.850	11.571	12.310	13.095	13.899	14.765
Employer contributions for employee pension and insurance funds	6.148	6.507	6.932	7.371	7.866	8.373	8.912	9.464	10.058
Employer contributions for government social insurance	2.924	3.086	3.279	3.479	3.705	3.937	4.183	4.436	4.707
Proprietors' income with inventory valuation and capital consumption adjustments	3.994	4.036	4.129	4.229	4.345	4.453	4.559	4.680	4.803
Less: Contributions for government social insurance	5.983	6.304	6.695	7.100	7.565	8.043	8.550	9.068	9.626
Employee and self-employed contributions for government social insurance	3.059	3.218	3.415	3.621	3.860	4.106	4.367	4.633	4.919
Employer contributions for government social insurance	2.924	3.086	3.279	3.479	3.705	3.937	4.183	4.436	4.707
Plus: Adjustment for residence	-0.744	-0.769	-0.817	-0.864	-0.923	-0.984	-1.049	-1.114	-1.185
Gross in	0.755	0.803	0.847	0.895	0.946	0.998	1.054	1.113	1.174
Gross out	1.499	1.572	1.663	1.759	1.869	1.983	2.103	2.226	2.359
Equals: Net earnings by place of residence	49.145	51.538	54.537	57.661	61.278	64.987	68.922	72.969	77.309
Plus: Rental, personal interest, and personal dividend income	17.216	18.431	19.700	21.092	22.579	24.155	25.852	27.553	29.360
Plus: Personal current transfer receipts	10.997	11.987	12.963	14.044	15.161	16.347	17.618	18.894	20.233
Equals: Personal income	77.358	81.956	87.200	92.797	99.018	105.489	112.392	119.416	126.903
Less: Personal current taxes	7.964	8.399	8.912	9.454	10.065	10.696	11.366	12.070	12.817
Equals: disposable personal income	69.394	73.556	78.288	83.343	88.952	94.793	101.026	107.346	114.086
Real personal income	60.452	62.330	64.471	66.568	68.941	71.244	73.584	75.777	78.071
Real disposable personal income	54.229	55.943	57.881	59.786	61.933	64.020	66.143	68.117	70.186
PCE-price index	127.965	131.486	135.256	139.403	143.626	148.067	152.740	157.590	162.548
Real personal income with housing price	59.431	61.288	63.371	65.396	67.693	69.914	72.169	74.277	76.485
Real Disposable personal income with housing price	53.313	55.007	56.894	58.733	60.812	62.825	64.871	66.769	68.760
PCE-price index with housing price	130.164	133.722	137.603	141.901	146.274	150.884	155.733	160.772	165.919
Relative housing price	1.114	1.117	1.122	1.126	1.132	1.138	1.143	1.148	1.154

Table 15: Income continued									
Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Personal income	134.891	142.986	151.674	160.828	170.637	181.168	192.295	204.356	217.366
Personal income as % of nation	0.632	0.637	0.641	0.645	0.649	0.654	0.658	0.663	0.668
Total earnings by place of work	93.433	98.773	104.511	110.571	117.054	124.046	131.434	139.402	147.984
Total wage and salary disbursements	72.812	77.101	81.710	86.580	91.792	97.403	103.337	109.731	116.623
Supplements to wages and salaries	15.691	16.627	17.635	18.703	19.847	21.079	22.383	23.788	25.300
Employer contributions for employee pension and insurance funds	10.693	11.336	12.028	12.760	13.546	14.391	15.286	16.251	17.289
Employer contributions for government social insurance	4.998	5.291	5.608	5.943	6.301	6.688	7.097	7.537	8.011
Proprietors' income with inventory valuation and capital consumption adjustments	4.931	5.044	5.165	5.287	5.416	5.564	5.715	5.884	6.061
Less: Contributions for government social insurance	10.223	10.825	11.472	12.158	12.891	13.681	14.517	15.418	16.388
Employee and self-employed contributions for government social insurance	5.225	5.533	5.865	6.215	6.590	6.994	7.421	7.881	8.377
Employer contributions for government social insurance	4.998	5.291	5.608	5.943	6.301	6.688	7.097	7.537	8.011
Plus: Adjustment for residence	-1.262	-1.340	-1.424	-1.513	-1.610	-1.715	-1.826	-1.947	-2.078
Gross in	1.239	1.303	1.372	1.444	1.521	1.602	1.687	1.779	1.877
Gross out	2.501	2.643	2.796	2.958	3.130	3.317	3.514	3.726	3.955
Equals: Net earnings by place of residence	81.949	86.608	91.615	96.900	102.553	108.649	115.091	122.037	129.518
Plus: Rental, personal interest, and personal dividend income	31.287	33.264	35.386	37.621	40.022	42.587	45.301	48.255	51.445
Plus: Personal current transfer receipts	21.655	23.113	24.673	26.307	28.062	29.931	31.904	34.063	36.403
Equals: Personal income	134.891	142.986	151.674	160.828	170.637	181.168	192.295	204.356	217.366
Less: Personal current taxes	13.610	14.409	15.263	16.160	17.118	18.144	19.224	20.388	21.636
Equals: disposable personal income	121.281	128.577	136.411	144.668	153.519	163.024	173.071	183.969	195.730
Real personal income	80.429	82.613	84.956	87.276	89.751	92.315	94.960	97.766	100.746
Real disposable personal income	72.314	74.288	76.407	78.506	80.748	83.070	85.467	88.013	90.717
PCE-price index	167.715	173.079	178.531	184.276	190.122	196.248	202.500	209.025	215.757
Real personal income with housing price	78.750	80.844	83.089	85.309	87.679	90.131	92.660	95.342	98.190
Real Disposable personal income with housing price	70.805	72.697	74.728	76.737	78.883	81.105	83.396	85.830	88.416
PCE-price index with housing price	171.289	176.868	182.543	188.525	194.617	201.004	207.528	214.340	221.374
Relative housing price	1.159	1.165	1.170	1.176	1.182	1.188	1.193	1.199	1.206

Table 15: Income continued							
Variable	2028	2029	2030	2035	2040	2045	2050
Personal income	231.339	246.458	262.661	364.661	510.610	715.783	990.301
Personal income as % of nation	0.673	0.678	0.684	0.715	0.746	0.775	0.790
Total earnings by place of work	157.215	167.178	177.812	244.454	339.088	471.828	651.958
Total wage and salary disbursements	124.022	132.008	140.539	194.004	270.292	377.141	522.429
Supplements to wages and salaries	26.924	28.674	30.541	42.190	58.700	81.740	113.020
Employer contributions for employee pension and insurance funds	18.403	19.605	20.887	28.889	40.235	56.079	77.603
Employer contributions for government social insurance	8.520	9.069	9.654	13.302	18.465	25.661	35.417
Proprietors' income with inventory valuation and capital consumption adjustments	6.269	6.496	6.732	8.259	10.096	12.947	16.510
Less: Contributions for government social insurance	17.430	18.554	19.754	27.258	37.934	52.869	73.180
Employee and self-employed contributions for government social insurance	8.910	9.485	10.100	13.956	19.469	27.208	37.763
Employer contributions for government social insurance	8.520	9.069	9.654	13.302	18.465	25.661	35.417
Plus: Adjustment for residence	-2.220	-2.374	-2.540	-3.597	-5.114	-7.257	-10.106
Gross in	1.981	2.092	2.210	2.931	3.937	5.335	7.289
Gross out	4.201	4.467	4.750	6.528	9.051	12.592	17.395
Equals: Net earnings by place of residence	137.565	146.250	155.518	213.599	296.041	411.702	568.672
Plus: Rental, personal interest, and personal dividend income	54.865	58.573	62.560	87.724	123.961	174.968	242.648
Plus: Personal current transfer receipts	38.909	41.636	44.583	63.338	90.609	129.112	178.981
Equals: Personal income	231.339	246.458	262.661	364.661	510.610	715.783	990.301
Less: Personal current taxes	22.972	24.410	25.940	35.385	48.394	65.831	87.846
Equals: disposable personal income	208.367	222.049	236.721	329.276	462.217	649.951	902.455
Real personal income	103.869	107.169	110.630	130.643	155.237	184.254	215.436
Real disposable personal income	93.555	96.555	99.705	117.966	140.524	167.308	196.325
PCE-price index	222.722	229.971	237.422	279.128	328.923	388.477	459.673
Real personal income with housing price	101.173	104.325	107.629	126.709	150.126	177.730	207.400
Real Disposable personal income with housing price	91.126	93.992	97.000	114.413	135.898	161.384	189.002
PCE-price index with housing price	228.657	236.241	244.043	287.795	340.120	402.737	477.484
Relative housing price	1.212	1.218	1.225	1.258	1.292	1.322	1.342

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total population	1947.501	1979.224	2013.093	2047.788	2084.320	2122.328	2161.527	2201.511	2242.367
Population as % of nation	0.626	0.630	0.634	0.639	0.643	0.649	0.654	0.659	0.665
By race and ethnicity									
White	999.580	1009.022	1019.488	1030.229	1041.729	1053.795	1066.237	1078.827	1091.607
Black	182.103	185.012	188.142	191.357	194.745	198.264	201.882	205.549	209.269
Other	205.340	209.110	213.047	217.019	221.149	225.377	229.691	234.053	238.468
Hispanic	560.478	576.081	592.416	609.183	626.696	644.893	663.717	683.082	703.023
By Age									
Ages 0-14	433.971	440.541	447.746	455.581	463.530	471.438	478.565	485.639	492.741
Ages 15-24	231.728	236.992	243.335	249.460	253.438	256.975	261.772	266.281	271.556
Ages 25-64	1054.712	1063.312	1068.203	1073.985	1084.454	1096.841	1110.450	1125.856	1141.054
Ages 65 & older	227.089	238.379	253.809	268.761	282.897	297.074	310.740	323.735	337.014
Labor force	965.023	970.215	978.678	988.102	1000.393	1013.554	1027.738	1042.175	1056.776
Participation rates by gender									
Male (16 & older)	0.731	0.723	0.716	0.710	0.705	0.701	0.696	0.692	0.687
Female (16 & older)	0.583	0.576	0.571	0.567	0.565	0.563	0.561	0.558	0.556

Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total population	2284.004	2326.445	2369.549	2413.215	2457.442	2502.255	2547.678	2593.737	2640.483
Population as % of nation	0.671	0.676	0.682	0.688	0.694	0.700	0.706	0.713	0.719
By race and ethnicity									
White	1104.527	1117.573	1130.653	1143.692	1156.676	1169.616	1182.515	1195.357	1208.163
Black	213.026	216.819	220.635	224.461	228.291	232.129	235.986	239.857	243.758
Other	242.921	247.424	251.976	256.569	261.210	265.898	270.644	275.442	280.302
Hispanic	723.530	744.629	766.285	788.493	811.266	834.612	858.533	883.080	908.260
By Age									
Ages 0-14	499.317	505.651	511.504	517.232	523.406	529.978	537.056	544.757	553.046
Ages 15-24	277.252	283.485	290.716	298.599	306.899	314.920	322.553	329.073	335.359
Ages 25-64	1156.433	1171.870	1188.025	1203.635	1218.767	1234.696	1250.253	1267.021	1283.988
Ages 65 & older	351.002	365.438	379.304	393.749	408.370	422.662	437.815	452.886	468.090
Labor force	1072.161	1087.160	1100.967	1115.051	1129.452	1144.174	1158.788	1174.099	1190.017
Participation rates by gender									
Male (16 & older)	0.683	0.678	0.673	0.669	0.665	0.661	0.657	0.653	0.650
Female (16 & older)	0.554	0.551	0.546	0.541	0.536	0.532	0.528	0.524	0.521

Table 16: Population and Labor Force continued							
Variable	2028	2029	2030	2035	2040	2045	2050
Total population	2687.866	2735.946	2784.702	3037.511	3302.941	3573.095	3834.368
Population as % of nation	0.725	0.731	0.738	0.770	0.802	0.831	0.854
By race and ethnicity							
White	1220.924	1233.679	1246.424	1309.669	1371.901	1430.489	1480.400
Black	247.683	251.645	255.645	276.163	297.291	318.054	337.042
Other	285.219	290.206	295.251	321.257	347.944	373.875	397.370
Hispanic	934.040	960.416	987.382	1130.422	1285.805	1450.677	1619.556
By Age							
Ages 0-14	561.907	571.283	581.174	636.714	696.805	753.299	802.830
Ages 15-24	341.432	346.810	351.696	372.455	400.156	437.298	476.296
Ages 25-64	1301.668	1319.717	1338.270	1445.182	1555.230	1662.766	1777.616
Ages 65 & older	482.859	498.136	513.562	583.160	650.750	719.733	777.627
Labor force	1206.424	1223.044	1239.738	1330.158	1429.330	1536.275	1643.562
Participation rates by gender							
Male (16 & older)	0.648	0.645	0.643	0.634	0.629	0.625	0.623
Female (16 & older)	0.518	0.515	0.513	0.502	0.496	0.492	0.489

Variable	2010	2011	2012	2013	2014	2015	2016	2017	2018
Starting population	1914.906	1947.500	1979.224	2013.093	2047.788	2084.320	2122.328	2161.527	2201.511
Births	31.015	31.097	31.207	31.343	31.556	31.771	32.047	32.356	32.695
Deaths	14.130	14.608	15.092	15.584	16.085	16.593	17.116	17.647	18.189
Natural growth	16.885	16.489	16.116	15.759	15.471	15.178	14.931	14.709	14.506
Population before migrants	1931.792	1963.989	1995.340	2028.852	2063.259	2099.498	2137.259	2176.236	2216.017
Total migrants	15.709	15.235	17.753	18.936	21.061	22.830	24.268	25.275	26.349
Economic migrants	11.377	10.444	12.774	13.780	15.721	17.309	18.550	19.364	20.211
Retired migrants	3.955	4.044	4.253	4.422	4.595	4.777	4.954	5.113	5.277
International migrants	1.066	1.050	1.065	1.080	1.095	1.110	1.125	1.139	1.155
Special pops migrants	-0.690	-0.303	-0.339	-0.347	-0.350	-0.365	-0.361	-0.341	-0.293
Total population	1947.500	1979.224	2013.093	2047.788	2084.320	2122.328	2161.527	2201.511	2242.367

Variable	2019	2020	2021	2022	2023	2024	2025	2026	2027
Starting population	2242.367	2284.004	2326.445	2369.549	2413.214	2457.442	2502.255	2547.678	2593.737
Births	33.106	33.602	34.161	34.748	35.380	36.043	36.772	37.620	38.471
Deaths	18.738	19.303	19.887	20.480	21.084	21.700	22.325	22.967	23.621
Natural growth	14.368	14.299	14.274	14.268	14.296	14.343	14.447	14.652	14.850
Population before migrants	2256.734	2298.303	2340.719	2383.816	2427.510	2471.785	2516.702	2562.330	2608.587
Total migrants	27.269	28.142	28.830	29.398	29.932	30.470	30.976	31.406	31.896
Economic migrants	20.920	21.602	22.065	22.448	22.781	23.127	23.440	23.677	24.011
Retired migrants	5.457	5.652	5.839	6.008	6.180	6.344	6.522	6.685	6.820
International migrants	1.170	1.185	1.199	1.214	1.228	1.245	1.259	1.273	1.288
Special pops migrants	-0.277	-0.297	-0.273	-0.271	-0.257	-0.246	-0.246	-0.229	-0.222
Total population	2284.004	2326.445	2369.549	2413.214	2457.442	2502.255	2547.678	2593.737	2640.483

Table 17: Demographics continued							
Variable	2028	2029	2030	2035	2040	2045	2050
Starting population	2640.483	2687.866	2735.945	2985.730	3249.140	3519.212	3783.473
Births	39.298	40.116	40.898	44.588	48.130	51.605	54.944
Deaths	24.280	24.942	25.607	28.978	32.211	35.136	37.721
Natural growth	15.018	15.174	15.291	15.610	15.919	16.469	17.223
Population before migrants	2655.500	2703.041	2751.236	3001.339	3265.058	3535.681	3800.696
Total migrants	32.365	32.905	33.465	36.172	37.883	37.414	33.672
Economic migrants	24.327	24.720	25.165	27.532	29.029	28.242	23.945
Retired migrants	6.946	7.068	7.168	7.410	7.537	7.777	8.253
International migrants	1.303	1.318	1.333	1.408	1.482	1.556	1.630
Special pops migrants	-0.211	-0.202	-0.202	-0.178	-0.165	-0.161	-0.156
Total population	2687.866	2735.945	2784.702	3037.511	3302.941	3573.095	3834.368



An affirmative action/equal opportunity institution.
